

means for directing said focused incident beam onto said cantilever to reflect therefrom to said detector;

said optical system having a numerical aperture sufficient with the wavelength of light from said light source whereby said focused beam forms a spot on said cantilever having a size of 8 μm or less in at least one dimension.

15

3. (Amended) [The] In an atomic force microscope of [Claim 1] including at least one cantilever mounted therein and an optical detector, the improvement, for generating a small incident beam spot, comprising: an optical system including a light source and means for producing a focused incident beam;

means for directing said focused incident beam onto said cantilever to reflect therefrom to said detector;

means for defining an aperture in the path of said incident beam; and

means for adjusting the size of said aperture whereby to control the size of said incident beam spot on said cantilever;

said optical system having a numerical aperture sufficient with the wavelength of light from said light source whereby said focused beam forms a spot on said cantilever having a size of 8 μm or less in at least one dimension.

16
4. (Amended)

[The] In an atomic force microscope of

[Claim 1] including at least one cantilever mounted therein and an optical detector, the improvement, for generating a small incident beam spot, comprising:

an optical system including a light source and means for producing a focused incident beam;

means for directing said focused incident beam onto said cantilever to reflect therefrom to said detector;

means for defining an aperture in the path of said incident beam; and

means for adjusting the shape of said aperture whereby to control the shape of said incident beam spot on said cantilever;

said optical system having a numerical aperture sufficient with the wavelength of light from said light source whereby said focused beam forms a spot on said cantilever having a size of 8 μm or less in at least one dimension.

17
10. (Amended)

[The] In an atomic force microscope [of

Claim 1 in which said means for directing said incident beam onto said cantilever comprises] including at least one cantilever mounted therein and an optical detector, the improvement, for generating a small incident beam spot, comprising:

an optical system including a light source and means for producing a focused incident beam;

Cantilever
23
a lens disposed to focus said incident beam normal to said cantilever to a spot on said cantilever[,]; and

[including] means confocal with said lens for viewing the location of said spot;

said optical system having a numerical aperture sufficient with the wavelength of light from said light source whereby said focused beam forms a spot on said cantilever having a size of 8 μm or less in at least one dimension.

A3
24.(New) In an atomic force microscope:

an optical detector;

a cantilever having a length of less than 30 μm ;

an optical system including a light source and means for producing a focused incident beam; and

means for directing said focused incident beam onto said cantilever to reflect therefrom to said detector;

said optical system having a numerical aperture sufficient with the wavelength of light from said light source whereby said focused beam forms a spot on said cantilever having a size of 8 μm or less in at least one dimension.